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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,262	07/24/2003	Harehide Sasaki	2842.15US01	9587

7590 03/19/2004

Douglas J. Christensen, Esq.  
Patterson, Thuente, Skaar & Christensen, P.A.  
4800 IDS Center  
80 South Eighth Street  
Minneapolis, MN 55402-2100

EXAMINER
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GILMAN, ALEXANDER

ART UNIT	PAPER NUMBER
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2833

DATE MAILED: 03/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/626,262	SASAKI ET AL.	
	Examiner	Art Unit	
	Alexander D Gilman	2833	<i>aw</i>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-14 is/are rejected.
- 7) ☒ Claim(s) 5 and 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 10, are rejected under 35 U.S.C. 102(b) as being anticipated by the admitted prior art.

With regard to claims 1, 2, 10, the admitted prior art Fig. 8-11 of the current specification) discloses a structure (60) for mounting a connector on a board (63), wherein the connector includes terminal (62) that has a tip end portion and a remainder portion, the board has a receiving hole, and a land (65) is provided in a section of the board about the receiving hole, wherein the terminal is connected to the land with at least a part of the tip end portion being located the receiving hole, and wherein the ratio of the cross-sectional area of the tip end portion to the cross-sectional area of the receiving hole is 0.37 (Spec., p. 8, line 17)

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Sekiya et al.

With regard to claims 1, Sekiya et al (US 6,011,222) discloses a structure for mounting a connector on a board, wherein the connector includes terminal (4) that has a tip end portion and a remainder portion, the board has a receiving hole, and a land is provided in a section of the board about the receiving hole, wherein the terminal is connected to the land with at least a part of the tip end portion being located the receiving hole, and wherein the ratio of the cross-sectional area of the tip end portion to the cross-sectional area of the receiving hole is 0.65 (col. 9, lines 45-53)

Claims 1, 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Downes

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With regard to claims 1, Downes (US 6,552,277) discloses a structure for mounting a connector on a board, wherein the connector includes terminal (26) that has a tip end portion and a remainder portion, the board has a receiving hole, and a land is provided in a section of the board about the receiving hole, wherein the terminal is connected to the land with at least a part of the tip end portion being located the receiving hole, and wherein the ratio of the cross-sectional area of the tip end portion to the cross-sectional area of the receiving hole is 0.21, 0.85 (col. 1, lines 48-63; col. 5, lines 45-53).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, <sup>4, 7, 8, 9, 11-14</sup> are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Schempp et al or Tsai et al.

With regard to claims 3, 4, 7, the admitted prior art discloses all of the limitations except for the cross-sectional area of the end portion at least 0.09 mm and no more than 0.25 mm wherein the cross-sectional area, and the receiving hole at least 0.28 mm and no more than 0.79 mm cross-sectional area of the receiving hole

Schempp et al (US 4,834,662) or Tsai et al (US 6,234, 834) disclose the right angle terminals with the reduced tail portion being soldered to a board.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to reduce the tail portion of, as taught by Schempp et al or Tsai et al, to prevent stress concentration caused by soldering if mating portion of the terminal has greater cross-section than the soldering portion.

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With reducing (even minimal) the cross-section of tail portion of the admitted terminal, the requirements regarding range of sizes for the terminal cross-section would be met. It also obvious that the hole size should be respectively reduced to prevent spill of solder from the solder gap.

With regard to claim 8, the admitted prior art when modified by Tsai et al disclose (Tsai et al, Fig. 4l) the tip end portion (52) has a first surface, which is side surface, and the remainder portion (524) has a second surface, which is also a side surface, and wherein the first surface and the second surface are flush with each other.

With regard to claims 9, 11-14 it would be obvious that the land size for the modified conventional terminal would be increased since the pitch A was not changed and the hole size was decreased. of the land is at least 0.4 mm and no more than 0.6 mm.

***Allowable Subject Matter***

Claim 15 is allowed.

Claims 5, 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

No prior art has been found to anticipate or render obvious the presently claimed subject matter. Specifically, none of the prior art of record discloses the combination of the limitations presented including the claimed geometrical characteristics of the rectangular tails portions of the terminals and through-holes which proved experimentally to be advantageous for crack protection in the specified application.

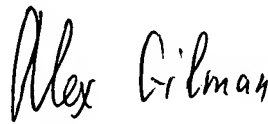
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander D Gilman whose telephone number is 571 272-2004. The examiner can normally be reached on Monday-Friday, 10:30 a.m. - 8:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A. Bradley can be reached on 571 272-2800 ext. 33. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

03/04/2004

A handwritten signature in black ink that reads "Alex Gilman". The signature is written in a cursive, flowing style.

**ALEXANDER GILMAN  
PRIMARY EXAMINER**